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Comparing Electronic News Media Reports of Potential Bioterrorism-Related Incidents Involving Unknown White Powder to Reports Received by the United States Centers for Disease Control and Prevention and the Federal Bureau of Investigation: USA, 2009–2011

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Abstract

There have been periodic electronic news media reports of potential bioterrorism-related incidents involving unknown substances (often referred to as “white powder”) since the 2001 intentional dissemination of *Bacillus anthracis* through the US Postal System. This study reviewed the number of unknown “white powder” incidents reported online by the electronic news media and compared them with unknown “white powder” incidents reported to the US Centers for Disease Control and Prevention (CDC) and the US Federal Bureau of Investigation (FBI) during a two-year period from June 1, 2009 and May 31, 2011. Results identified 297 electronic news media reports, 538 CDC reports, and 384 FBI reports of unknown “white powder.” This study showed different unknown “white powder” incidents captured by each of the three sources. However, the authors could not determine the public health implications of this discordance.

Keywords

forensic science; electronic news media; potential bioterrorism; unknown “white powder”; law enforcement; public health

The 2001 incident wherein *Bacillus anthracis* spores were distributed intentionally through the U.S. postal system was the first bioterrorism-related anthrax attack in the United States (1,2). The news media (electronic, newspaper, television, radio) brought increased awareness to the public about the use of anthrax as a weapon of mass destruction (WMD).

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The findings and conclusions in this report are those of the author(s) and do not necessarily represent the official position of the Centers for Disease Control and Prevention/the Agency for Toxic Substances and Disease Registry.

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One television report indicated that the letters targeted prominent elected officials, news anchors and editors (3). Although the targets may have been prominent officials, the victims of the attack also included newspaper workers, postal workers, capitol building workers, and a hospital worker (4). The anthrax spores used in the attack were ground finely so that they could remain airborne longer, potentially providing more opportunities for it to be suspended and inhaled. This incident resulted in five deaths and 17 non-fatal illnesses (5,6). Because of this 2001 anthrax incident, people now commonly think of an unknown substance containing *Bacillus anthracis* whenever there is a suspicious unknown “white powder”. Even though major metropolitan areas were targeted in 2001 (i.e., New York City, Washington, DC), the use or threatened use of unknown substances (referred to as unknown “white powder”) have been reported across the US.

Federal, state, local, tribal, territorial or international agencies can access CDC’s subject matter expertise in the public health management of potential threat agents (including unknown “white powder”) through various means. They can contact CDC through the CDC Emergency Operations Center (EOC) which serves as the CDC triage call center for all domestic and international public health-related emergency calls. They might also directly contact CDC’s Division of Preparedness and Emerging Infections, Emergency Preparedness and Response Branch (DPEI/EPRB) which coordinates Agency-wide responses to actual or potential bioterrorism events. Callers specifically interested in anthrax or several other defined bacteria-associated infectious diseases may already have working relationships with the epidemiologists or microbiologists in the Bacterial Special Pathogens Branch (BSPB) and contact them directly. A fourth entrée into CDC occurs when a State or local public health department or an agency like the FBI sends specimens to a member of CDC’s Laboratory Response Network (LRN) (7) which is overseen by CDC’s Division of Preparedness and Emerging Infections, Laboratory Preparedness and Response Branch (DPEI/LPRB).

The LRN is a network of approximately 150 laboratories (mainly state and local public health laboratories) that can respond to bioterrorism, chemical terrorism and other public health emergencies (8) (Fig. 1), and it uses a data exchange tool called Results Messenger (RM) (9). While an incident involving an unknown “white powder” may be reported directly to EOC via a phone call, it is also through the LRN RM that CDC is made aware of these incidents. Weekly meetings are being held that include staff from LPRB and EPRB to discuss current environmental and clinical laboratory incidents and test results entered in the RM.

There is no statutory requirement for the CDC to be notified about unknown “white powder” incidents, and unknown “white powder” is not a notifiable disease (10). However, an agency may contact CDC to request public health-related assistance (e.g., epidemiologic, clinical, laboratory) in response to an unknown “white powder” incident. In a previous study, almost all calls to the Division of Bioterrorism Preparedness and Response (now called the Division of Preparedness and Emerging Infections) requesting CDC assistance were for clinical and/or laboratory consultation and/or request for analysis of samples (11).

Furthermore, unknown “white powder” incidents are not required to be reported to the FBI although it collaborates with the CDC to assist state, local, tribal, territorial, or international agencies when requested. From a law enforcement point of view, the mere presence of unknown “white powder” does not constitute a threat, and judgment and circumstance -- and not statute -- are the more probable predictors of the likelihood that law enforcement will be called to investigate what could well be flour, powdered sugar, or cocaine. Of course, supplemental information (e.g., threatening correspondence, secondary sources of intelligence) enhances the perceived risk; thus, increasing the likelihood that FBI will become involved.

The primary objective of this study is to review potential bioterrorism-related incidents involving unknown substances (often referred to as “white powder”) reported to three sources: electronic news media, CDC, and FBI. A secondary objective is to compare potential bioterrorism-related incidents involving unknown “white powder” that were reported online by electronic news media with unknown “white powder” incidents reported to the CDC and the FBI for concordance. Third, we describe the policies, procedures, and limitations faced by the CDC and FBI ascertaining reporting of unknown “white powder” incidents. Finally, we discuss reasons to reinforce the mutual commitment to share information about unknown “white powder” and other biothreat incidents between law enforcement and public health.

Methods

For electronic news media reports, we reviewed potential bioterrorism-related incidents limited to those involving unknown “white powder” that were reported online during a two-year period from June 1, 2009 – May 31, 2011 and compared them with similar incidents reported to the CDC and the FBI. We selected only those electronic news media reports posted online by established national, state and local news corporations (e.g. CNN News, The Washington Post, The Boston Globe). For purposes of this study, we refer to CDC reports as those incidents called in by outside agencies notifying CDC Programs or subject matter experts of such incidents as well as those laboratory results entered in the LRN RM database. In addition, the FBI Weapons of Mass Destruction (WMD) Directorate provided us data that represented reports compiled by any field office throughout the United States.

The number of “electronic news media” reports was ascertained through Internet searches for unknown “white powder” using Yahoo and Google search engines. A particular incident may be reported in two or more stories in the electronic news media reports, and an unknown “white powder” incident may also be reported more than once in each of the CDC and FBI databases because of updates or progress reports. However, for purposes of this study, unduplication efforts attempted to treat these as a single incident when it could be validated that they were redundant or updated reports.

The following types of information were abstracted from each data source: report date, state of incident occurrence, specific location of incidence, identification of the unknown “white powders” and agencies involved in the consultation and response. We then described the geographic distribution and location of unknown “white powder” incidents, tabulated

unknown “white powder” incidents by FBI region and source of information, and tabulated identities of unknown “white powder” as reported in the electronic news media. We constructed an electronic database using Excel 2003 and performed descriptive statistical analyses using SPSS 17.0 and SAS 9.2.

Results

There were 297 unknown “white powder” incidents from 43 states and the District of Columbia that were reported online by the electronic news media. In comparison, there were 538 unknown “white powder” incidents that were reported to CDC, and there were 384 unknown “white powder” incidents reported to the FBI WMD during the same period of time. There were five unknown “white powder” incidents that were reported in both the electronic news media and CDC.

For the FBI data, we found that “region” is the smallest geographic parameter that is available for analysis. It was not possible to correlate unknown “white powder” incidents from the three sources at the state level. Therefore, we were not able to determine how many unknown “white powder” incidents were reported to the FBI and similarly reported to CDC and/or covered by the electronic news media.

Figure 2 shows that many of the electronic news media-reported domestic incidents came from Florida (n=31, 10.4%), California (n=26, 8.8%), Texas (n=23, 7.7%), New Jersey (n=21, 7.1%), New York (n=19, 6.4%), Alabama (n=13, 4.4%), Utah (n=13, 4.4%), Virginia (n=12, 4.0%), Washington, DC (n=10, 3.4%), and Massachusetts (n=10, 3.4%).

Figure 3 shows that unknown “white powder” incidents reported by the electronic news media occurred in law enforcement offices, courthouses and jail/correctional facilities (n=38, 12.7%). Government locations other than those three mentioned previously (n=80, 26.9%) included “federal building mailrooms”, “state offices”, “city hall”, Internal Revenue Service, US Attorney’s Office, Senator’s office, Division of Motor Vehicle, Veterans Affairs Administration, US Post Office, “military call center”, State Attorney General’s office, Social Security Administration, and “others”. “Other” locations included a mailbox, a not-for-profit organization, and a car in a parking lot, among others.

Table 1 shows the frequency distribution of unknown “white powder” incidents by FBI regions from the three sources of information: electronic news media, CDC and the FBI. This also shows that the CDC had more unknown “white powder” incidents (n=538) than those reported in the electronic news media (n=297) and the FBI (n=384).

The majority of electronic news media reports (n=223, 75.1%) did not mention the final identity of the unknown “white powders.” Table 2 shows that those that were identified included sugar/artificial sweetener (n=10, 13.5%), flour (n=9, 12.2%), baby powder (n=5, 6.8%) and talcum powder (n=5, 6.8%). None of the substances were identified as a bioterrorism agent. However, the electronic news media did not indicate how they determined the components/ingredients of those unknown “white powders.” In contrast to the electronic news media, CDC and FBI laboratories could not report final identities of the unknown “white powders”.

Joint public health and FBI investigations were mentioned in some of the electronic news media reports (n=66, 22.2%). Other responders that were commonly mentioned in the electronic news media reports were fire departments (n=56, 18.9%) and police departments (n=51, 17.2%) which could be at the state or local levels. Less frequently mentioned responders included “hazmat teams”, Department of Homeland Security, United Nations Security Staff, the United States Postal Service, Department of Environmental Protection, Sheriff’s Office, “bomb squad”, Emergency Management Director, Environmental Health and Safety, Regional Transit Authority, US Marshals, and Bureau of Alcohol, Tobacco, Firearms and Explosives.

Discussion

Increased public awareness about unknown “white powder” incidents began after the intentional dissemination of *Bacillus anthracis* spores through the US Postal System in 2001 because of the many media reports. Unknown “white powder” incidents occurred in practically every state and region, but it is not known how many of these were intentionally disseminated with malicious intent versus the number of unknown “white powders” that just happened to be noticed but were unintentional. In addition, they also occurred in various public or private places.

Although none of the suspicious unknown “white powders” contained *Bacillus anthracis* or other bioterrorism agents in this study, one cannot assume that unknown “white powders” are harmless nor conclude that they pose no threat to public health or national security at the time the unknown “white powder” is discovered. The potential and unknown threat before the unknown “white powder” is discovered can only be ascertained after a thorough investigation and completion of laboratory tests. A review of these unknown “white powder” incidents from all three sources indicates that the presence of an unknown “white powder” may be a threat although the percentage of these incidents that involved the intentional and malevolent versus the unintentional dissemination of powder (e.g., spilled sugar) could not be determined in this study.

Shortly after the 2001 anthrax incident, CDC and FBI colleagues published a paper that described the complementary benefits of collaboration between public health and law enforcement agencies during investigations of bioterrorism incidents (in general) and unknown “white powder” incidents (in particular) (11). The FBI may receive a report of any unknown “white powder” incident, but it may only investigate when there are surrounding circumstances that indicate a crime may have been committed.

Although not required by any law or statute, CDC can be notified about unknown “white powder” incidents through calls to the CDC EOC or a CDC program and upon request for assistance from a state, local, tribal, territorial, or international health department or agency. Given the number of reports included in the CDC, FBI and electronic media datasets, the number of unknown “white powder” incidents during a non-heighten public awareness period was found to be in the hundreds, and they are distributed throughout the United States. In existing practice, unknown “white powder” incidents are managed at the local level.

Every state has at least one LRN laboratory, and due to its unique role, it is likely that samples from an unknown “white powder” incident will be sent to a LRN laboratory to be tested for biological threat agents. Given that so few non-LRN laboratories have the ability to test for biothreat agents and given that both State Health Departments and the FBI will send suspicious substances to LRN laboratories, the CDC-managed LRN RM database may be the most definitive database of unknown “white powder” incidents in the United States. However, it only captures those incidents that were suspicious enough to have a specimen collected and sent for analysis.

Existing CDC/FBI protocols require that samples that are collected in unknown “white powder” incidents in which the FBI is informed are sent to a LRN laboratory – or comparable national laboratory (e.g. Sandia, Lawrence Livermore) – for analyses. In contrast to the electronic news media reports, however, CDC and FBI data do not report the final identity of the unknown “white powders”. LRN or other comparable laboratories test only for the presence or absence of specific threat agents including *Bacillus anthracis* that may exist within the white powder.

Data from FBI WMD database and LRN RM database should ideally capture the overwhelming majority of unknown “white powder” incidents that come to the attention of authorities. The fact that the FBI uses a shared asset (i.e., LRN member laboratories) to test suspicious biothreat agents enhances the likelihood that FBI and CDC will know about the same incidents. However, some incidents are ongoing FBI investigations and for reasons of national security, information about them cannot be shared with other government entities nor divulged to the public. Therefore, it is not possible for the authors in this study to determine how many similar incidents reported to FBI were also reported to CDC and/or covered by the electronic news media because of the sensitive nature of the FBI data.

Absolute correlation between the databases is not possible. For example, northern Virginia unknown “white powder” incidents were reported to the Northeast FBI Region while the rest of unknown “white powder” incidents that occurred in Virginia were reported to the Southeast FBI Region. Given the sensitivity of the FBI data, “region” is the smallest geographic parameter that is available for publication. Therefore, it would be impossible to correlate unknown “white powder” incidents from the three sources at the state level.

The response to unknown “white powder” incidents involves responders from various disciplines (e.g., public health, law enforcement officers, Fire/EMS). Since unknown “white powder” incidents are a common occurrence in every state, the responses to these incidents likely require significant human and financial resources. An example of the resources needed to respond to just one of these incidents occurred in Utah. An unknown “white powder” investigated in Utah turned out to be a silicon powder used in shipping, but the response involved 25 members of the Fire Department and an eight-person hazmat team (12). This response not only entailed a large financial cost, but it also took away human resources from their traditional day-to-day services.

The collaborative efforts between law enforcement and public health during the 2001 anthrax attacks was something new at that time, and it required venturing into unfamiliar

territory for many public health and law enforcement officials (13,14,15). Nevertheless, it showed the importance of an effective collaboration between public health and law enforcement or on hospital collaboration with public safety organizations on bioterrorism response (16,17,18,19,20). This limitation is partially offset by an ongoing dialogue between CDC and FBI. The working relationship that blossomed during the 2001 investigation of *Bacillus anthracis* through the US Postal System has evolved to the institutionalization of a joint criminal and epidemiological investigations workshop that is offered to public health and law enforcement professionals throughout the United States. To date, 32 Joint Criminal and Epidemiological Investigations Workshops have been conducted, training over 2,900 participants from law enforcement, public health, emergency services, and other agencies.

The Joint Criminal and Epidemiological Investigation Workshop promotes a greater understanding among law enforcement and public health personnel regarding their roles, responsibilities and information needs for the response to biological threats. Some states and local jurisdictions have used the workshop as the foundation for developing a memorandum of understanding (MOU) or written protocol to guide joint investigation activities between law enforcement and public health. CDC and FBI signed their own memorandum for joint public health-law enforcement investigations in February 2013. These MOUs along with periodic joint exercises reduce barriers that existed between the two professions and increase the informal sharing of information that does not exist on any database nor required by any statute.

In summary, correlating data from the three sources into a national picture has several limitations, and public health implications of these findings are unknown. First, there is no requirement for FBI to be informed of all unknown “white powder” incidents. Second, CDC collects data only if there is a confirmed laboratory test result, if there is a credible threat as reported by the FBI, or if there is a request for technical assistance from a state or local health department. Thus, it is likely that unknown “white powder” incidents in this study were underreported. Third, emergency responses (public safety, law enforcement or public health) to unknown “white powder” incidents are generally managed at the state/local level. If state/local agencies determine that there is no credible threat, they may decide not to report the incident to the FBI nor CDC.

Conclusion

This paper showed that there has been an increased public awareness and interest (given the number of stories) regarding unknown “white powder” incidents since the 2001 intentional dissemination of *Bacillus anthracis* spores through the US Postal System. This study also showed that none of the three entities collected data for all unknown “white powder” incidents; however the public health implications of this finding could not be determined.

Unknown “white powder” incidents occurred in practically every state and region. In addition, they also occurred in various public or private places and could take the form of other chemicals or substances that do not contain *Bacillus anthracis* spores. However, it is not known how many of these were intentionally disseminated with malicious intent versus

the number of unknown “white powders” that just happened to be noticed but were unintentional.

Furthermore, results of this study serve as a reminder that unknown “white powder” incidents require an integrated response with personnel from various disciplines: public health, law enforcement and Fire/EMS. Collaborative efforts between law enforcement and public health continue to be enhanced including routine sharing of information. This data sharing (along with other collaborative endeavors like joint training and exercises) is critical to assure that any state or local jurisdiction is prepared to respond to perceived or actual biological threat agents in the future.

Ideally, data collection and reporting of potential bioterrorism-related incidents involving unknown “white powder” can be improved if all local law enforcement agencies and other agencies involved will report these incidents to a national or centralized electronic reporting system. Perhaps, a system similar to the Drug Abuse Warning Network (21) or other federal electronic reporting systems could be set up. Such a humongous project, however, will require much-needed buy-ins from various partners and stakeholders.

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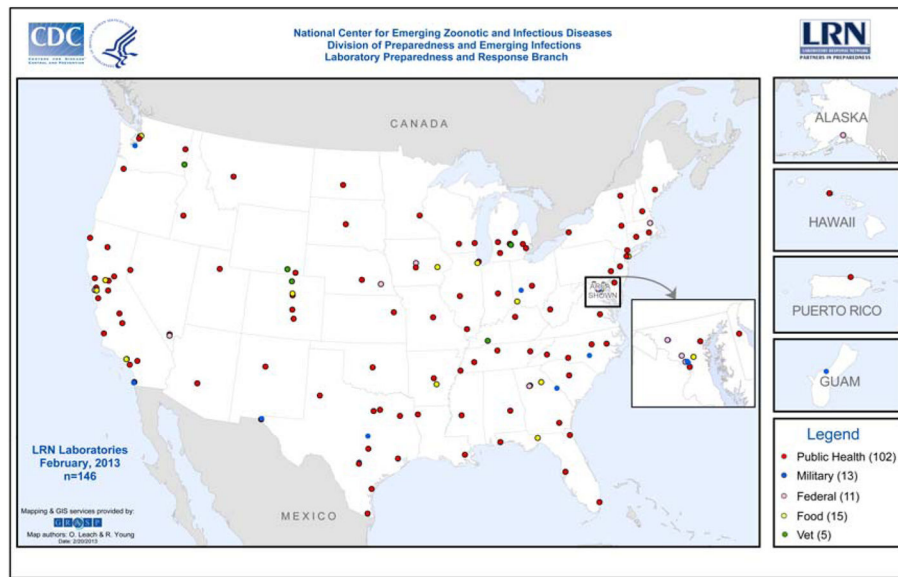


Fig. 1. Map coverage of the Laboratory Response Network in the United States of America, February 2013

(Source: <http://www.bt.cdc.gov/lrn/usmap.asp>)



Fig. 2.
USA map showing frequency distribution of electronic news media “white powder” incidents by state, 2009–2011 (n=297)

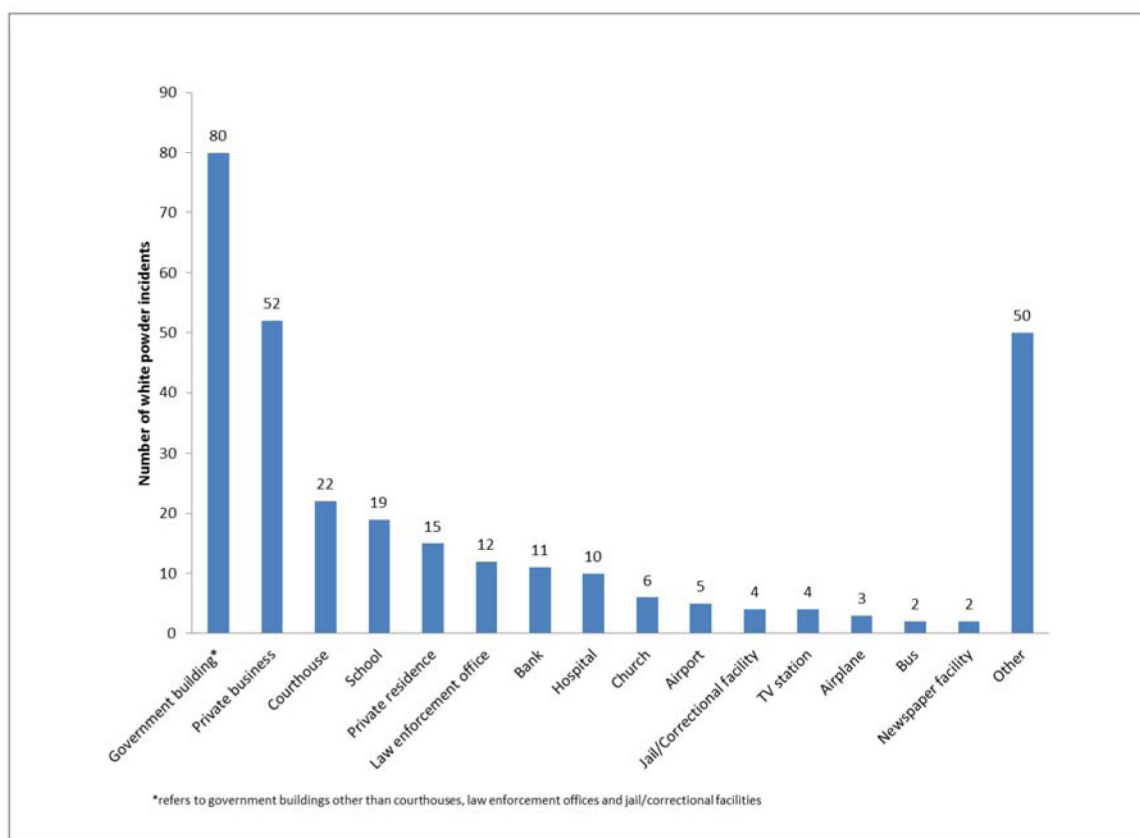


Fig. 3.
Electronic news media reports of “white powder” incidents by location, USA, 2009–2011
(n=297)

TABLE 1

Unknown “white powder” incidents* by FBI region[†] and source of information: January 1, 2009 – May 31, 2011

Region	Source of information					
	News media		CDC		FBI	
	n	%	n	%	n	%
Central	39	13.13	94	17.50	87	22.66
Northeast	95	31.99	269	50.00	122	31.77
Southeast	71	23.91	58	10.80	66	17.19
West	92	30.98	117	21.70	109	28.39
Total =	297	100.00	538	100.00	384	100.00

* Redundant or updated reports of the same unknown “white powder” incident is counted as one incident

[†] Region (field office area of responsibility):

Northeast - New York, Maryland, West Virginia, Massachusetts, Rhode Island, Connecticut, New Jersey, Washington, DC, Northern Virginia, Vermont, Pennsylvania, Maine, Delaware, New Hampshire

Southeast - rest of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Kentucky, Tennessee, Puerto Rico

Central - Ohio, Michigan, Illinois, Indiana, Arkansas, Louisiana, Mississippi, Missouri, Kansas, Oklahoma, Nebraska, North Dakota, South Dakota, Iowa, Minnesota, Wisconsin

West - California, Oregon, Idaho, Washington, Montana, Colorado, Nevada, Texas, New Mexico, Arizona, Alaska, Hawaii, Wyoming, Utah

TABLE 2

Identities of unknown “white powder” as reported in the electronic news media, USA, 2009–2011 (n=74)*

Identity %	n	
Sugar/artificial sweetener	10	13.5
Flour	9	12.2
Baby powder	5	6.8
Talcum powder	5	6.8
Medical powder (e.g., antibiotic, aspirin, pain pill)	4	5.4
Narcotic (e.g., methamphetamine, cocaine)	4	5.4
Baking powder	3	4.1
Baking soda	3	4.1
Coffee creamer	3	4.1
Corn starch	3	4.1
Baby formula	2	2.7
Candy	2	2.7
Cream of Wheat	2	2.7
Fire extinguisher residue	2	2.7
Bean substance and cream sauce	1	1.4
Boric acid or warfarin	1	1.4
Brownie or cake baking mix	1	1.4
Calcium carbonate (main component of chalk)	1	1.4
Crushed silica	1	1.4
Foot powder	1	1.4
Instant soup	1	1.4
Office dust	1	1.4
Ordinary household product	1	1.4
Powdered alfredo sauce	1	1.4
School project source	1	1.4
Soap shavings	1	1.4
Sodium bicarbonate	1	1.4
Table salt	1	1.4
Titanium dioxide	1	1.4
Ultra Slim-Fast powder	1	1.4
Whey powder	1	1.4
Total = 74	74	100.0

* 223 electronic news media reports did not mention anything about the identity of the unknown “white powder”